DMS-7370

Steel Bridge Member Fabrication Plant Qualification

Effective Date: January 2015

1. DESCRIPTION

This Specification describes the qualification processes for fabrication plants producing steel bridge members, as listed in Article 3, for use on Department projects. Each fabrication plant must meet the requirements of this Specification and the requirements of the Department's Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

2. MATERIAL PRODUCER LIST

The Materials and Pavements Section of the Construction Division (CST/M&P) maintains a Material Producer List (MPL) of primary and secondary bridge member fabrication plants that have demonstrated the ability to conform to the requirements of this Specification. Only primary and secondary steel bridge members produced by fabrication plants listed on the MPL, entitled "Steel Bridge Fabrication Shops," can be used on Department projects.

3. STEEL BRIDGE MEMBERS

3.1. **Primary Bridge Members.** Primary bridge members include:

- webs and flanges of plate, tub, and box girders;
- rolled beams and cover plates;
- floor beam webs and flanges;
- arch ribs and arch tie beams or girders;
- truss members;
- diaphragm members for curved plate girders or beams;
- pier diaphragm members for tub girders;
- splice plates for primary members; and
- any other member designated as "primary" or "main" on the plans.

3.2. **Secondary Bridge Members.** Secondary bridge members include:

- bracing (diaphragms, cross frames, and lateral bracing) and
- all other miscellaneous bridge items not considered primary members.

4. QUALIFICATION PROCEDURE

4.1. **Qualification Request.** Submit a request for plant approval under DMS-7370 to DMS_Prequal@txdot.gov.

Requests must include the following, in PDF format:

- company and fabrication plant name;
- physical and mailing addresses;
- contact person (management representative appointed by executive management per AISC), title, phone number, and email address;
- list of the type of bridge members to be evaluated for qualification purposes;

- copy of applicable American Institute of Steel Construction (AISC) Steel Bridge Fabricator certification with applicable endorsements, including a copy of the most recent complete audit report, exit meeting report, and written response to AISC of corrective actions for all specific discrepancies. The Engineer must approve any proposed deviation from AISC's certification recommendations or guidelines. All opportunities to make a choice in the AISC specifications and supporting documents must also be approved by the Engineer;
- list of all on-site Quality Control (QC) personnel and copy of current American Welding Society (AWS) Certified Welding Inspector(s) (CWI) certifications;
- copy of the most recent Personnel Qualification and Certification Program in Nondestructive Testing (Written Practice), in accordance with the current Recommended Practice No. SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," published by the American Society for Nondestructive Testing, Inc. (ASNT);
- list of all nondestructive testing (NDT) personnel and copy of the most recent applicable NDT certifications, in accordance with the applicable AWS code, for personnel preforming and reviewing NDT. Administration of NDT Level I and II personnel certifications and approval of NDT test procedures must only be performed by current ASNT NDT Level III certification in the specific method(s);

NOTE: Ultrasound technicians must pass a hands-on test administered by CST/M&P as required per Section 441.3.1.5.3 of the Standard Specifications;

- copy of Welding Procedure Specifications (WPSs) and pertinent Procedure Qualification Records (PQRs), if applicable, in accordance with the applicable AWS code. Include which WPS will be used for each joint or joint type;
- copy of written plant-specific QC and production procedures for members fabricated by welding or bolting. Submit for Department approval procedures for each type of structure (rolled beams with welded or bolted splices, plate girders with welded or bolted splices, tub girders with welded or bolted splices, box girders, plate girder bents, railroad thru-girders and plate girders, truss bridges, orthotropic deck segments, or other major bridge structure types). The procedures must include details required by AASHTO/NSBA Steel Bridge Collaboration S2.1 and applicable Department specifications, as well as:
  - special processes such as planing or facing;
  - details of heat treating and heat straightening procedures; and
  - any other information required by the Engineer;

NOTE: The Engineer must approve any proposed deviation from specifications. All opportunities to make a choice in the AASHTO/NSBA or ANSI/AWS specifications and supporting documents must also be approved by the Engineer; and

- copy of proposed field office floor plan drawings. Facilities, materials, and equipment required for inspection will be in accordance with Standard Specifications Article 6.5, "Plant Inspection and Testing," and Item 504, "Field Office and Laboratory." Unless otherwise approved, provide an office meeting the requirements of Section 504.2.2.3 of the Standard Specifications, "Type C Structure (Field Office)," except that only 200 sq. ft. are required if fewer than 3 inspectors will be assigned to the facility. Provide adequate parking space for Department vehicles adjacent to the field office. Provide desks, a layout table, a plan rack, and broadband internet service via an Internet Service Provider (ISP) capable of accessing the Department's Citrix® Metaframe Server at Austin Headquarters using Department-furnished Citrix® client software.

  High-speed broadband connection may be digital subscriber line (DSL), cable, satellite, fiber-optic (FiOS), or wireless (WISP-hotspot). Provide connections in the quantity needed to provide simultaneous connection of the Contractor and the Inspector. Connection and download speeds must be commensurate with current industry standards for accessing and downloading large Contract Plans and specifications.

  Provide all equipment to connect the desktop or laptop microcomputer to the ISP. Because of problems connecting to the Citrix® Metaframe server, the Department will not permit integrated services digital network (ISDN) service. Validate that the chosen ISP can establish a connection. ISPs that use TCP/IP protocol should be capable of accessing the Citrix® server. Resolve all firewall and technical issues.

4.2. **Evaluation.** CST/M&P will review the qualification request documentation for all fabrication plants. If the qualification request includes the required information, CST/M&P will perform an initial Department-directed plant audit to ensure compliance with this Specification. The Department will evaluate all fabrication plants for adequate equipment, processes, organization, experience, knowledge, and competent personnel to produce acceptable work.

4.2.1. **Qualification.** If the required submittals and audit(s) verify compliance with this Specification, the Department will list the fabrication plant on the MPL. CST/M&P reserves the right to perform additional audits (announced or unannounced) at its discretion for the plant to remain on the MPL as an approved fabrication plant of primary and/or secondary steel bridge members.

Fabrication plants must continue successful completion of any additional Department-directed audits and any follow-up plant audits by adequately implementing corrective actions for all deficiencies. Fabrication plants must also promptly submit the following electronically in order to maintain approval status:

- copy of current applicable AISC certification with applicable endorsements and complete audit report, exit meeting report, and written response to AISC of corrective actions for all specific discrepancies. The Engineer must approve any proposed deviation from AISC's certification recommendations or guidelines. All opportunities to make a choice in the AISC specifications and supporting documents must also be approved by the Engineer;
- updated QC personnel list and copy of the most recent AWS CWI certifications for approved on-site QC personnel when changes occur;
- copy of the most recent Personnel Qualification and Certification Program in Nondestructive Testing (Written Practice), in accordance with the current ASNT Recommended Practice No. SNT-TC-1A, when changes occur;
- updated NDT personnel list and copy of the most recent applicable NDT certifications, in accordance with the applicable AWS code, for personnel preforming and reviewing NDT when changes occur. Administration of NDT Level I and II personnel certifications and approval of NDT test procedures must only be performed by current ASNT NDT Level III certification in the specific method(s); and
- request for approval prior to changes to QC and production procedures, WPSs, field office, or internet service. Maintain the office, equipment, and internet service so that it will continue to function properly for the intended use. Include date of revision and highlighted changes on appropriate submittals.

Failure to attain and promptly provide the above may result in disqualification, which includes removal from the MPL for applicable products.

4.2.2. **Failure.** Plants that fail to qualify under this Specification may not furnish steel bridge members for Department projects and must show evidence of correction of all deficiencies before consideration for qualification.

4.3. **Random Inspection and Testing.** The Department reserves the right to inspect, sample, test, conduct random audits of plants, and perform random audits of required paperwork and test reports at any time to ensure compliance with Item 441, "Steel Structures," and this Specification. Provide facilities and access to allow for inspection of materials, the process of fabrication, and the finished steel structure.

4.4. **Disqualification.** Any fabricator that fails to comply with the requirements of this Specification is subject to disqualification, which includes removal from the MPL. A disqualified fabricator is prohibited from furnishing product to Department projects and may not bid any work let during the disqualification period. The disqualification period will be a minimum of 30 days or as determined by CST/M&P.

Causes for disqualification include, but are not limited to:

- repetitive poor quality and workmanship,
- falsification of or incomplete documentation,
- lack of certified or qualified QC personnel, or

- certifying or furnishing product that does not meet specifications.

If a fabricator has been disqualified, all previously produced products will be subject to review and possible removal from assigned projects. If the Department disqualifies a fabricator, the Department may permit subcontracting pending product quantities for active projects to another Department-approved fabrication plant for the specific product.

4.5. **Re-Qualification.** Once the disqualification period established by CST/M&P has elapsed, the fabricator may begin the re-qualification process. The fabricator must pass an additional AISC and Department-directed audit and provide the Department with evidence of corrected deficiencies.

The fabricator must bear all Department expenses associated with disqualification and re-qualification.

4.6. **Inactive Fabricator.** If a fabricator does not furnish any steel bridge members to Department projects for a period of 2 years, CST/M&P will remove the fabricator from the MPL due to inactivity.

CST/M&P will consider future qualification after the fabricator indicates it will furnish steel bridge members to Department projects and is in compliance with this Specification.

5. PERSONNEL QUALIFICATIONS

Provide qualified and certified personnel as follows, unless otherwise approved on a temporary basis. Submit and receive Department approval for changes to personnel prior to performing work.

5.1. **Professional Engineer (PE).** Have readily available access to the services of a licensed PE experienced in steel bridge structures design and fabrication. The PE will be responsible for reviewing Nonconformance Reports (NCRs) that include typical fabrication errors or changes to ensure structural adequacy. The PE will also be responsible for reviewing potentially structurally deficient members. The Engineer of Record (EOR) will need to review the NCR for acceptance, at the fabricator's expense, if the discrepancy significantly changes the original design.

5.2. **Quality Control Supervisor (On Site).** QC Supervisors must be current AWS Certified Welding Inspectors and meet the requirements of Quality Control Technician. QC Supervisors must be on site working primarily on the shop floor of the production areas directly overseeing the QC technicians and NDT technicians, and performing routine inspection during production operations. QC Supervisors must have the authority and management's support to make general inspection-related decisions.

5.3. **Quality Control Technician.** QC technicians must be proficient in utilizing the applicable plans, specifications, and test methods and in verifying compliance with the QC and production procedures. QC technicians must be current AWS Certified Welding Inspectors in accordance with the current AWS code for inspection prior to welding assembly, during welding assembly, during welding, after welding, repairs, and acceptance of materials and workmanship. Provide an adequate number of qualified and AWS-certified QC technicians for each specific operation detailed in the plant's production procedures. QC technicians must be on site and independent of production personnel, as determined by the Engineer. The QC staff must provide inspection of all materials and workmanship prior to Department inspection. QC personnel performing these duties are subject to Department approval.

5.4. **Non-Destructive Testing Technician.** All NDT technicians must have current ASNT certification in accordance with AWS for the specific method under which the testing will be performed. NDT technicians must be independent of production personnel, as determined by the Engineer. NDT technicians must be proficient in utilizing the applicable specifications and test methods and in verifying compliance. NDT technicians performing these duties are subject to Department approval.

5.5. **Fabricator Safety Point of Contact.** Designate a safety point of contact to ensure the appropriate personal protection equipment (PPE) is used, safety training is conducted, and safety procedures are followed. Inform

the Department of all applicable safety procedures in the plant's safety program. Provide a copy of this safety program to the Department when requested.

6. QUALITY CONTROL RESPONSIBILITIES

QC is solely the responsibility of the fabricator. The Department will not perform QC or act as a third-party witness for the fabricator. Perform the following activities, at a minimum, to ensure the quality and acceptability of fabricated products.

6.1. **Inspection.** QC personnel will follow approved procedures and verify correct processes for each member before requesting Department fabrication inspection. QC personnel must ensure, at a minimum:

- correct materials utilized during fabrication and accurate traceability maintained;
- proper preparation and evaluation of welding in accordance with the applicable AWS code;
- proper procedures for all cutting, shearing, machining, bending, straightening, and surface preparation;
- proper procedures for heat applications such as heat curving and cambering;
- proper procedures for verifying member geometry including required assemblies;
- proper NDT performed and evaluated in accordance with the applicable AWS code;
- proper procedures for all repairs;
- proper procedures and examination of required coatings; and
- proper procedures for handling, storage, and loading of members.

6.2. **Documentation.** Maintain the following documentation, at a minimum, available upon Department request, until the Department's final acceptance of the project from the Contractor in accordance with AISC and for a minimum of 7 years:

- proper Form 1818 (a.k.a. D-9-USA-1), "Material Statement," with supporting mill test reports (MTRs) and shipping or storage invoices,
- proper geometry and assembly worksheets,
- proper NDT reports and radiographic film,
- proper coatings inspection application reports,
- proper splice plate worksheets,
- proper heat number worksheets,
- properly completed Department Form SS-2, and
- all erection sheets and any as-built shop drawings.

6.3. **Certification of Product.** CWI QC personnel for approved primary and secondary bridge member plants must certify product conformance with all plans and specifications and electronically submit required documentation including the following, at a minimum:

- verification that product conforms with the approved shop drawings and all Contract requirements;
- signed Department Form SS-2 certifying that material, inspections, documentation, repairs (if applicable), and final product acceptance were properly performed and inspected;
- verification of proper submission to the Department of applicable MTRs and Department Form SS-2 prior to any material being approved (stamped). Form 1818 (a.k.a. D-9-USA-1) must be promptly submitted throughout project fabrication; and
- marking of completed and compliant steel bridge members with fabricator's approved monogram stamp on each member in the approved location. The fabricator's designated approval stamp must be Department approved and listed on the MPL prior to use.

7. NONCONFORMANCE REPORT (NCR)

When the requirements of this Specification or Item 441, “Steel Structures,” are not met, determine the cause and take immediate corrective action, and submit a NCR to the Department for approval. Failure to take timely corrective actions, leading to similar repetitive deficiencies, could be cause for rejection of members. Submit all NCRs in accordance with the Department’s NCR guidelines document.

Receive Department approval before beginning repairs. Perform all repair work in strict compliance with the approved NCR and repair procedure.